

Methane Emission Standards for Crude Oil and Natural Gas Facilities



California Environmental Protection Agency

 **Air Resources Board**

May 23, 2017

Overview

- * Background
- * Regulation Requirements and Impacts
- * Implementation

Background

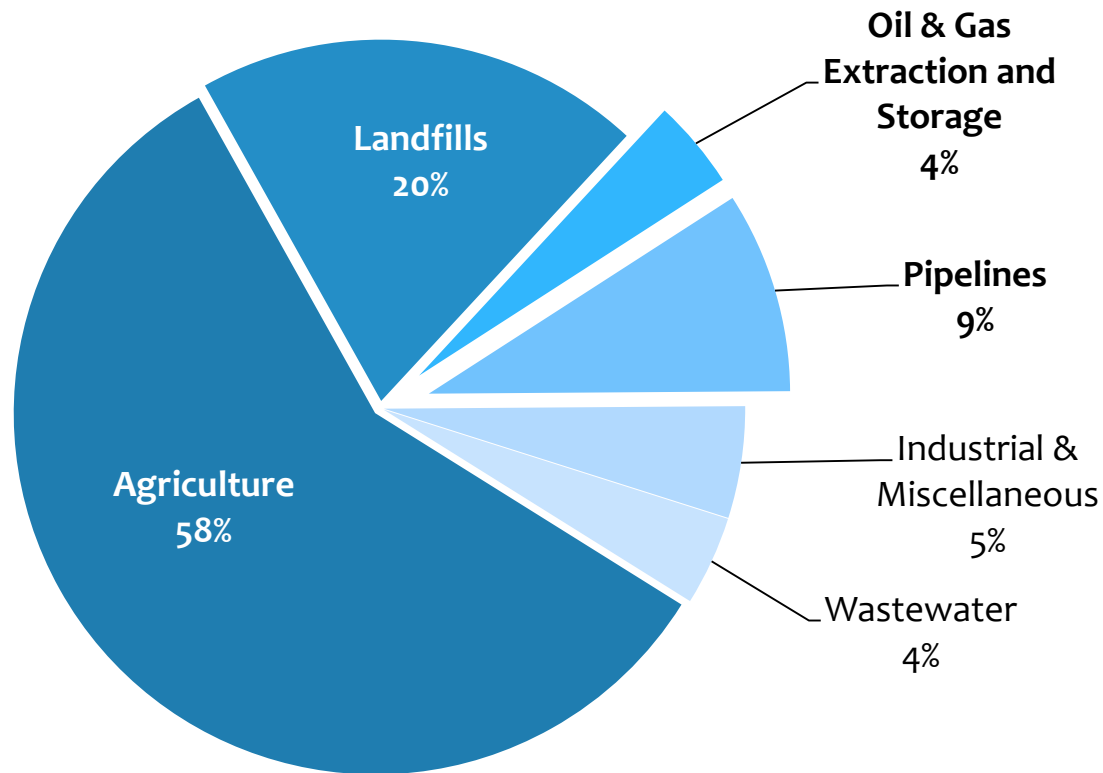


Policy Drivers

- * Climate Change Scoping Plans identify oil & gas sector as large source of Greenhouse Gas (GHG) emissions.
- * Short-Lived Climate Pollutant (SLCP) Strategy includes a target of 40-45 percent reduction in methane from oil & gas sector as a whole by 2025.
- * Recent, separate legislation addressing well stimulation and underground storage monitoring.
- * Over 5 million people in California live within one mile of at least one oil or gas well.

California 2013

Methane Emission Sources



Other Regulations

- * Districts regulate oil & gas for Volatile Organic Compound (VOC) purposes.
 - * ARB's regulation covers leaking equipment not already covered by air district rules.
- * Public Utilities Commission developing best practices to be consistent with ARB's regulation.
- * ARB regulation covers **new and existing** sources, and is generally more stringent and broader than federal requirements.

Regulation Requirements and Impacts



Applicability

- * The regulation addresses fugitive and vented emissions of methane from both new and existing oil and gas facilities.
- * The covered facilities include:
 - Oil and Gas Production, Processing, and Storage
 - Gathering and Boosting Stations
 - Natural Gas Underground Storage
 - Compressor Stations

Regulation Standards

Separator and Tank Systems

- * Applies to systems at all regulated facilities.
- * Requires flash testing to determine annual methane emissions.
- * Requires systems with annual emissions above 10 metric tons (MT) methane to install vapor collection.
- * Exemptions for low throughput systems and small gauge tanks.



Regulation Standards

Circulation Tanks

- * Tanks used as part of a well stimulation treatment.
- * Operators submit a Best Practices Management Plan, followed by a control equipment technical assessment.
- * If technical assessment proves out, tanks controlled for emissions by January 1, 2020.



Regulation Standards

Leak Detection & Repair (LDAR)

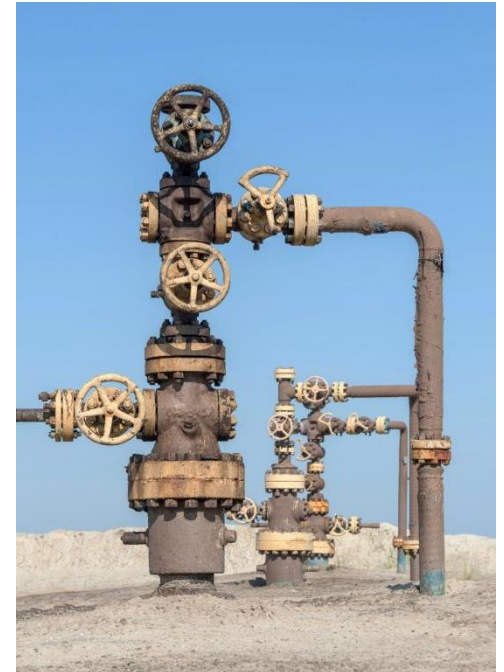
- * Requires daily inspections and quarterly testing to check components for leaks.
- * Builds on current requirements by many districts to control VOCs.
- * Regulation will extend testing to methane at natural gas facilities.
- * Responses to comments will clarify implementation; may also issue guidance.



Regulation Standards

Underground Gas Storage

- * Monitoring program designed for the early detection of leaks:
 - Ambient air monitoring
 - Daily or continuous monitoring at injection/withdrawal wells.
 - Incorporates recent legislative requirements.
- * Operators submit monitoring plans to ARB for approval.



Regulation Standards

Natural Gas Compressors

- * Emission standards for reciprocating compressor rod packings and centrifugal compressor wet seals.
- * Requires either (1) replacement of high-emitting rod packing or wet seal, or (2) collection of leaking gas.
- * All compressors subject to LDAR.



Regulation Standards

Pneumatic Devices & Pumps

- * Continuous to no-bleed:
 - Air or electricity to operate; or,
 - Controlled with a vapor collection system



Other Measuring and Reporting Requirements

Implementation Dates

* **January 1, 2018:**

- Flash testing
- LDAR inspections
- Natural gas storage monitoring plans
- Registration and permitting

* **January 1, 2019:**

- Vapor collection on separator & tank systems
- Pneumatic devices and compressor seal change-outs
- Circulation tank technology assessment

* **January 1, 2020:**

- Circulation tank vapor collection, pending technology assessment

GHG Emission Reductions & Costs

- * Overall estimated annualized cost, with natural gas savings, of \$27,300,000
- * Estimated continuing reductions of more than 1.4 million MT of CO₂ equivalent per year, using a 20 year Global Warming Potential for methane.
- * Estimated overall cost-effectiveness of \$19 per MT of CO₂ equivalent reduced.

Emission Reduction Co-Benefits

- * Over 3,600 tons per year (TPY) of VOC reductions statewide.
- * Over 100 TPY of reductions statewide of Toxic Air Contaminants, such as Benzene, Toluene, Ethyl-Benzene, and Xylenes.
- * Neutral statewide Oxides of Nitrogen (NO_x) impact.

Implementation



Implementation

- * Regulation allows both ARB and the districts to implement; district implementation is preferred.
- * ARB and districts developed a model Memorandum of Agreement (MOA) to specify roles and responsibilities.
 - Coordinate enforcement, and support information and data sharing.
 - MOAs may be tailored for specific district needs.

Implementation

(continued)

- * Expect MOAs to be finalized this summer, prior to implementation of the regulation.
- * Work with districts and stakeholders to develop implementation guidance.
- * Review data being reported under program and monitor program implementation.
- * Periodically update Board on status and propose adjustments as necessary.

Questions?

- * Jim Nyarady
- * jim.nyarady@arb.ca.gov
- * 916-322-8273
- * <https://www.arb.ca.gov/cc/oil-gas/oil-gas.htm>